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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
DEBERRY, REGINA M

ART UNIT	PAPER NUMBER
1647	

DATE MAILED: 03/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/966,545	FERNANDES ET AL.	
	Examiner	Art Unit	
	Regina M. DeBerry	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for R ply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 December 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-34* is/are pending in the application.

4a) Of the above claim(s) *30,33 and 34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-29,31 and 32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *18-34* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Status of Application, Amendments and/or Claims

The substitute specification filed 15 May 2002 (Paper No. 5) has been entered.

The amendment filed 26 September 2001 (Paper No. 7) has been entered in full.

The amendment filed 15 May 2002 (Paper No. 8) has been entered in full.

Applicant's election without traverse of Group I (claims 72-83, 85 and 86, renumbered as 18-29, 31 and 32, see below) in Paper No. 10 (13 December 2002) is acknowledged.

Claims 30, 33 and 34 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 10.

Matter of Record

The substitute specification filed 15 May 2002 (Paper No. 5) improperly entered claims 72-88. The Examiner has renumbered these claims as 1-17 under 37 CFR 1.126. The amendment filed 26 September 2001 (Paper No. 7) requested to cancel all pending claims and to add claims 72-88. The Examiner has renumbered these claims as 18-34.

Claims 1-17 are cancelled. Claims 30, 33 and 34 are withdrawn from further consideration. Claims 18-29, 31 and 32 are under examination.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 18-29, 31 and 32 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

The claims are drawn to isolated nucleic acid (SEQ ID NO:15), isolated nucleic acid encoding a polypeptide (SEQ ID NO:16), vector, host cell, and a method for producing the polypeptide. The specification discloses polynucleotides and polypeptides collectively referred to as the SECX gene set; the sequences, which are disclosed in SEQ ID NOs 1-31(page 2, lines 16-18). Clone 4324229-2 includes the nucleic acid sequence SEQ ID NO:15 and encodes the polypeptide, SEQ ID NO:16 (page 4, lines 34-35). The clone was isolated from lymph nodes. The specification states that BLASTX analysis indicates that a portion of the C-terminus of clone 4324229-2 protein is identical to KIAA1061. It is similar to cell adhesion molecules and follistatin-like protein (page 14, lines 1-10).

The specification does not disclose any information regarding true ligands or functional characteristics/mechanisms of action of SECX (clone 4324229-2). Generally, the art acknowledges that function cannot be predicted based solely on structural similarity to a protein found in the sequence databases. For example, Karp (1998, Bioinformatics 14:753-754) states that functional annotations are propagated repeatedly from one sequence to the next with no record made of the source of a given annotation, leading to a potential transitive catastrophe of erroneous annotations. Incorrect functional predictions can result from a number of causes, including: divergence of function within homologous proteins, confusion or omission of functions across

multimodular proteins or simply choosing the strongest homolog as the source of attributed function. In addition, polynucleotides are known in the art to encode polypeptides, yet the polypeptides have no known function.

The specification asserts several utilities, however the claimed invention lacks specific and substantial utility. A process to screen for receptor agonists and/or antagonists, using probes to isolate other cDNAs with high sequence similarity, making antibodies, and using fragments of polypeptides for peptide synthesis are not specific utilities. Agonist/antagonist assays are performed for any receptor-ligand pair when the physiological role of each is unknown. Antibodies can be made to any protein. A probe is a general utility that would be applicable to the broad class of the invention. A specific utility is a utility that is specific to the subject matter claimed. This contrasts with a general utility that would be applicable to the broad class of the invention.

The specification states that SECX nucleic acid molecules, proteins, antibodies can be incorporated into pharmaceutical compositions suitable for administration (page 47). The specification fails to disclose any working examples demonstrating that SECX nucleic acid, protein or antibody was used to treat a disease/condition. The specification cites the use of the SECX gene as part of a diagnostic assay for detecting diseases or susceptibility to diseases associated with SECX. The utility of a claimed DNA does not necessarily depend on the function of the encoded gene product, if the claimed DNA had a specific and substantial utility such as it hybridizes near a disease-associated gene or it has a gene regulating activity. However, the specification establishes no connection between the predisposition of a particular disease and SECX

or that SECX has gene regulating activity. Further experimentation is required before this asserted utility is substantial.

The instant application has failed to provide guidance as to how one of skill in the art could use the claimed invention in a way that constitutes a specific or substantial utility. The proposed uses of the claimed invention are simply starting points for further research and investigation into potential practical uses of the claimed polypeptide.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 18-29, 31 and 32 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

In addition, the claims encompass isolated nucleic acid sequences encoding substitution, deletions, insertions and fragments of SEQ ID NO:16 and variant nucleic acid sequences of SEQ ID NO:15. Applicant has not provided sufficient guidance as to how to make and use the encoded polypeptides which are not 100% identical to the polypeptide of SEQ ID NO:16. Applicant has not provided an activity for the instant protein.

The specification has failed to teach one of skill in the art which amino acid substitutions, deletions or insertions to make. Furthermore, the Applicant has not defined a function for the instant protein and thus specification has failed to teach one of skill in the art which amino acid substitutions, deletions or insertions to make that will preserve the structure/function of the protein corresponding to SEQ ID NO:16. In addition, the art does not recognize making a variant of known polynucleotides for the purpose of make a probe. There is no assurance that those variants, once expressed, would have the desirable properties. Degenerative probes allow imperfect matches and carry the risk of obtaining false signals from unrelated DNA sequences.

While it is known that many amino acid substitutions are generally possible in any given protein, the positions within the protein's sequence where such amino acid substitutions can be made with a reasonable expectation of success are limited. Certain positions in the sequence are critical to the protein's structure/function relationship, e.g. such as various sites or regions directly involved in binding, activity and in providing the correct three-dimensional spatial orientation of binding and active sites. These or other regions may also be critical determinants of antigenicity. These regions can tolerate only relatively conservative substitutions or no substitutions (see Wells, 1990, Biochemistry 29:8509-8517). Applicant has only provided the sequence data. Even if an active or binding site were identified in the specification, they may not be sufficient, as the ordinary artisan would immediately recognize that an active or binding site must assume the proper three-dimensional configuration to be active, which

conformation is dependent upon surrounding residues; therefore substitution of non-essential residues can often destroy activity.

Due to the large quantity of experimentation necessary to generate the infinite number of variants recited in the claims and determine an activity such that it can be determined how to use the claimed polynucleotides encoding SEQ ID NO:16, the lack of direction/guidance presented in the specification regarding the same, the absence of working examples directed to same, the complex nature of the invention, the state of the prior art which establishes the unpredictability of the effects of mutation on protein structure and function, and the breadth of the claims which fail to recite any structural or functional limitations and an activity undue experimentation would be required of the skilled artisan to make and/or use the claimed invention in its full scope.

Claims 18-29, 31 and 32 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification provides adequate written description for SEQ ID Nos 15 and 16, but not variants. The instant claims are directed to polynucleotide encoding a polypeptide set forth in SEQ ID NO:16 and fragments, variants or derivatives thereof, oligonucleotide sequences which hybridize to nucleic acid encoding SEQ ID NO:16 or fragments, variants or derivatives thereof and isolated nucleic acid which is complementary to the SEQ ID NO:15 or fragment thereof.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116).

With the exception of SEQ ID Nos 15 and 16, the skilled artisan cannot envision the detailed chemical structure of the encompassed polypeptides and polynucleotides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Furthermore, in the absence of a recitation of clear hybridization conditions, the nucleic acid probe will hybridize with unrelated DNA sequences, corresponding sequences from other species, mutated sequences, allelic variants, splice variants and so forth. None of these sequences meet the written description provision of 35 USC 112, first paragraph. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See Fiers v. Revel, 25 USPQ2d 1601 at 1606 (CAFC 1993) and Amgen Inc. v. Chugai Pharmaceutical Co. Ltd., 18 USPQ2d 1016.

One cannot describe what one has not conceived. See Fiddes v. Baird, 30 USPQ2d 1481 at 1483. In Fiddes, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only isolated nucleic acid encoding the polypeptide of SEQ ID NO:16 and isolated nucleic acid comprising the nucleic acid sequence of SEQ ID NO:15 but not the full breadth of the claim meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that Vas-Cath makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 20, 21, 24 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 20 and 21 are drawn to "a nucleic acids that encode a polypeptide or its complement". Proteins do not have complements.

Claim 24 is drawn to "an oligonucleotide sequence that is complimentary to and hybridizes under stringent conditions with the nucleic acid of claim 18, a variant or mutant thereof". Claim 25 is drawn to the oligonucleotide sequence of claim 24. Stringency is relative, and the art does not recognize a single set of conditions as stringent. The specification also does not provide an unambiguous definition for the term. In the absence of a recitation of clear hybridization conditions (e.g., "hybridizes at

wash conditions of A X SSC and B % SDS at CoC"), the claims fail to define the metes and bounds of the varying structures of polynucleotides recited in the claimed methods.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Regina M. DeBerry whose telephone number is (703) 305-6915. The examiner can normally be reached on Mondays-Fridays 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Kunz can be reached on (703) 308-4623. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

RMD
February 28, 2003